



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,196	10/10/2003	Dorel Ioan Toma	243414US6YA	1260
22850	7590	10/02/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER NGUYEN, THANH T	
			ART UNIT 2893	PAPER NUMBER
			NOTIFICATION DATE 10/02/2008	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/682,196	<b>Applicant(s)</b> TOMA ET AL.	
	<b>Examiner</b> THANH T. NGUYEN	<b>Art Unit</b> 2893	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 52 and 54-63 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 52 and 54-63 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-29, 49-53 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 52, 54-63 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The new limitation “exposing said sidewall surface to at least one of TMCTS and OMCTS **in a non-plasma environment**” contains subject matter which was not described in the original specification. It is suggested to delete the limitation.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 52, 54-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura (U.S. Patent Publication No. 2003/0089988) in view of Cho et al. (U.S. Patent Publication No. 2003/0003768).

Referring to figures 8-18, Matsuura teaches a method of treating a dielectric film comprising:

etching a portion of said dielectric film (24) so as to form in said dielectric film a sidewall surface (see figure 9, paragraph# 83); and

exposing said sidewall surface at least one of TMCTS and OMCTS (see paragraph# 64, wherein said dielectric film has a dielectric constant value (1.8-3.0, see paragraph# 40) less than the dielectric constant of SiO<sub>2</sub>.

Regarding to claim 54, forming a mask (25, see figure 8, paragraph# 83) on said dielectric film (24); and forming a pattern in said mask (see figure 8-9, paragraphs#80-85), wherein said etching comprises transferring said pattern in said mask (25) to said dielectric film (24, see figure 9).

Regarding to claim 55, exposing said sidewall surface to at least one of a nitrogen containing material and a chlorine containing material (see paragraph# 62).

Regarding to claim 56, the dielectric film has a dielectric constant in a range of from 1.6 to 2.7 (see paragraph# 40).

Regarding to claim 57, the dielectric film is porous (see paragraph# 40).

Regarding to claim 58, the dielectric film is non-porous (see paragraph# 40).

Regarding to claim 59, heating the dielectric film to a temperature in a range of from 50C to 400C (see paragraph# 66. It is inherent that anneal to form a silicon carbide film would facilitate annealing the dielectric film as well *See In re Best*, 195 USPQ 428 (CCPA 1977) and *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

Regarding to claim 60, the sidewall surface is exposed to TMCTS (see paragraph# 64).

Regarding to claim 61, the sidewall surface is exposed to OMCTS (see paragraph# 64).

Matsuura teaches exposing the dielectric film by using OMCTS or TMCTS to forming a silicon carbide in the plasma CVD apparatus. However, the reference does not teach exposing the dielectric film by using OMCTS or TMCTS to forming a silicon carbide in a non-plasma environment.

Cho et al. teaches a method of forming a silicon carbide film (figure 4a-4c, paragraph# 55) by using OMCTS or TMCTS (see paragraph# 29) to forming a silicon carbide in a non-plasma environment (thermal process) or plasma CVD process (see paragraph# 37).

Therefore, it would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made would form a silicon carbide in a non-plasma environment (thermal process) in process of Matsuura as taught by Cho et al. because thermal CVD is a low cost equipment and without charge ions so that the insulating layer wouldn't be charge up during deposition process.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Nguyen whose telephone number is (571) 272-1695, or by Email via address Thanh.Nguyen@uspto.gov. The examiner can normally be reached on Monday-Thursday from 6:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Davienne Monbleau, can be reached on (571) 272-1945. The fax phone number for this Group is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pairedirect.uspto.gov>. Should you have questions on access to thy Private PAIR system, contact the Electronic Business center (EBC) at 866-217-9197 (toll-free).

/Thanh T. Nguyen/  
Thanh Nguyen  
Primary Examiner, Art Unit 2813